

Weather Information Processing

NASA

technology

spawned an

advanced

weather

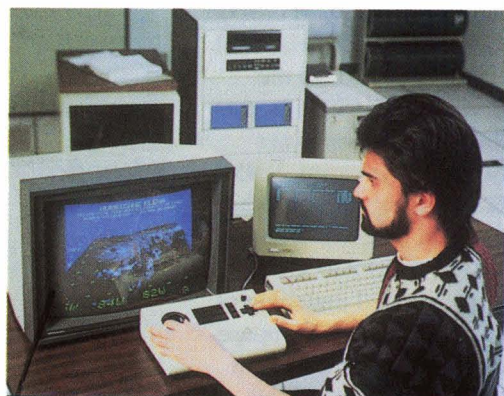
forecasting

system

On September 11, 1989, Typhoon Sarah hit the east coast of the Republic of China (Taiwan), packing winds of 125 miles per hour. But the people of the island republic were ready for Sarah. The country's Central Weather Bureau was able to issue timely warnings, aided by its brand new METPRO Weather Satellite Reception and Processing Ground Station. METPRO collected data from the Geostationary Meteorological Satellite positioned over the Equator near Australia and converted the data into images showing the size, center and track of the storm as it approached Taiwan.

A product of General Sciences Corporation (GSC), Laurel, Maryland, METPRO is a complete

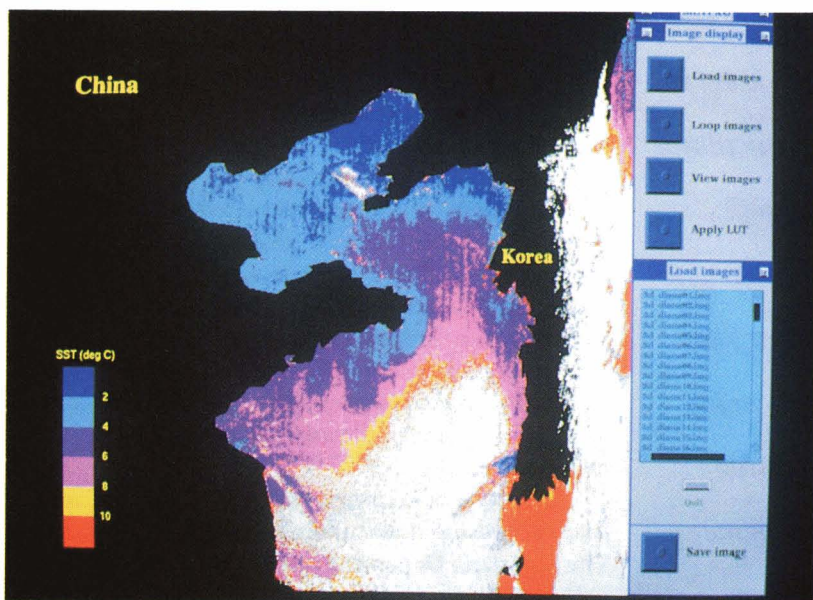
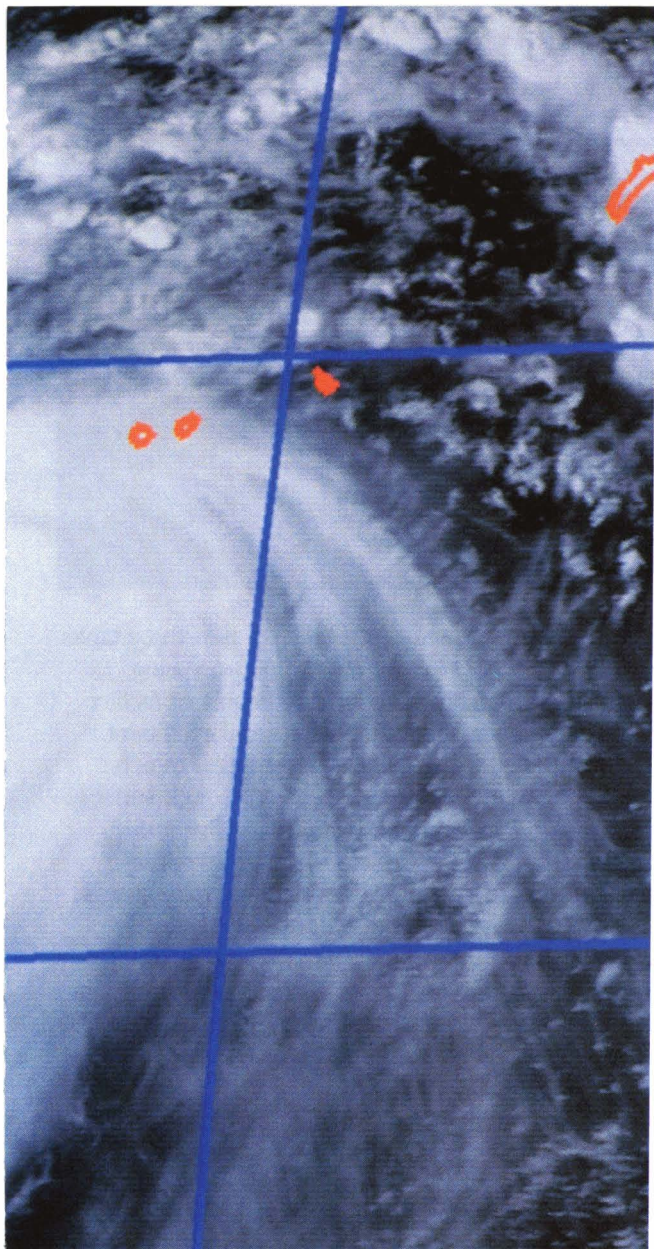
meteorological data acquisition and processing system (left) designed to meet the full requirements of meteorological research and operational weather forecasting. It consists of off-the-shelf hardware and software components produced by other companies and integrated by GSC, together with GSC-developed METPRO applications software for collecting and processing raw weather data from satellites, remote ground-based observation systems and radio weather broadcasts to generate weather maps and images. In 1990, GSC introduced the METPRO UNIX



workstation for production of high quality weather graphics and reports.

GSC is a high technology consulting firm specializing in scientific and engineering support. The company has developed several commercial products based on experience acquired in contract work for NASA and other government agencies. The company was founded by Drs. Jeffrey C. Chen and Lily C. Chen, president and executive vice president respectively. The Chens emigrated from the Republic of China in the early 1970s and studied at the University of Wisconsin, both earning doctorate degrees in nuclear physics in 1974. Four years later, armed with a \$75,000 NASA contract, the Chens started GSC as a basement industry. From that modest beginning, GSC has expanded dramatically; the company now has more than 240 employees, annual sales of about \$20 million and is predicting growth of 25-30 percent a year.

At lower left, Drs. Jeffrey and Lily Chen consult with a GSC programmer. On the programmer's console is a METPRO image of Typhoon Sarah,



shown in closeup **above**. Outlined in red in center photo is the island of Taiwan and, to the north, the tip of mainland China; the eye of the storm is clearly visible to the east of Taiwan. **At right** is an example of another METPRO product, a sea surface temperature map of the waters off the coasts of south China and Korea, created by processing data from the TIROS satellite's Advanced Very High Resolution Radiometer; the dark blue color indicates the lowest temperature range (0 to 2 degrees Centigrade), the reddish brown color the highest (10 degrees) and the other colors denote two degree increments in between.

GSC's initial NASA work, for Goddard Space Flight Center's Laboratory of Atmospheric Sciences, involved development of a research system — called METPAK — for processing and analyzing data from weather satellites. Later, GSC produced an enhanced NASA version of METPAK that allowed processing weather observations from radar, surface and satellite sensors, as well as oceanographic data. This Atmospheric and Oceanographic Information

Processing System served as the departure point for GSC's development of the commercial METPRO system, introduced in 1989. GSC has sold four METPRO systems (two to the Republic of China, one each to Korea and Thailand) and has prospects for a number of others.

In addition to continuing work for NASA in support of weather, Earth observation, astronomy, oceanography and other areas of research, GSC has performed extensive contract work for such other agencies as the Environmental Protection Agency, the National Institutes of Health, the National Oceanographic and Atmospheric Administration, the Department of Veterans Affairs and the Department of State (GSC supports office automation for more than 250 U.S. embassies).

Besides METPRO, GSC has recently introduced two other commercial products: RISKPRO, an environmental toxic chemical assessment system, and MAPPRO, a geographic information system.

*Special
applications
software
generates
weather
maps and
images*